IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Backes	
Application No.: 10/781214	Group Art Unit: 2616
Filed: 02/18/2004	Examiner: Harper
Title: Method for Selecting an Optimum Access Point in a Wireless Network on a Common Channel	
Attorney Docket No.: 160-033	

Commissioner for Patents
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P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANT'S BRIEF PURSUANT TO 37 C.F.R. § 1.192

This Appellant's brief is hereby submitted in accordance with the Notice of Appeal filed herewith.

I. Real Party in Interest

The real party in interest is Autocell Laboratories, Inc.

II. Related Appeals and Interferences

Appellants are not aware of any appeals or interferences that are related to the present case.

III. Status of the Claims

Claims 1-6 are pending in this application. Claims 1-3, 5 and 6 are rejected. Claim 4 is allowed, subject to objection. This is an appeal of the final rejection dated July 1, 2008. The rejection of claim 1 is the subject of this appeal.

IV. Status of Amendments

All submitted amendments have been entered and considered.

V. Summary of Claimed Subject Matter

The subject matter of claims 1-6 is a method for use by a wireless device in a wireless communications environment to evaluate an access point. In particular, the method ascertains whether an alternative access point is a superior candidate even where the alternative access point has adopted a temporarily lowered power level, thereby rendering a simple signal strength indicator insufficient. With regard to the cited elements of claim 1, the specification states "a STA 16 will send a Bid message to an AP that is "better" than the STA's

current AP, where better means that the AP has a lower biased distance."[1] The Specification further states that the mobile station "notes the received power level that accompanied the beacons and Announce messages and uses these values along with the **TP backoff values** to calculate the distance to the APs in Banzais."[2] (emphasis added) As described at the bottom of page 19, "the TP Backoff value indicates how far from maximum power the sending AP's radio has been turned down, as will be explained in more detail in the AP Power Adjustment section." Using the TP backoff values specifically supports "ascertaining based at least in-part on a level of attenuation of signal strength of transmissions by the alternative access point," and section 2.a.1.3 at pp. 32-38 supports "where the alternative access point transmits at less than full power." The sending of the Bid message, as quoted above, supports "requesting association with the alternative access point if it is ascertained that the wireless device should attempt to associate with said alternative access point."

The limitation recited in claim 2, "automatically collecting, by the wireless device, information about the alternative access point, including an indication of the level of attenuation," is supported in the Specification at page 48, which describes building a table including TP Backoff indicators from beacons and DRCP Announce messages.

The limitation in claim 3 "ascertains that the wireless device should attempt to associate with the alternative access point if the alternative access point is closer than the current access point in terms of a biased distance which accounts

[1] Page 41, last full paragraph
[2] Page 49, lines 16-18

for AP loading" is supported in the specification in section 4.c.2 Biased Distance Calculation, beginning at page 55, and particularly at page 56.

The limitation of claim 5 "wherein the step of requesting association requests association by sending a message to the alternative access point" is supported in the Specification at page 44 in the description of "Bidding," under section 4, STA Optimization.

The limitation of claim 6 "wherein the step of ascertaining ascertains that the wireless device should attempt to associate with the alternative access point based at least in-part on maximum potential signal strength of the alternative access points" is supported in the Specification at pages 51 and 39. At the top of page 51 it is stated that "the notion of what constitutes a better AP takes into account the distance to the AP in Banzais." At the top of page 49 the distance in banzais equation is a function of received power plus TP Backoff. Received power plus TP Backoff is maximum potential signal strength of the alternative access point from the perspective of the mobile station.

VI. Grounds of Rejection to be Reviewed on Appeal

A. **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US2003/0207699 (Shpak) and US2005/0047354 (Zeira).**

VII. Argument

A. Claim 1 distinguishes the cited references because the wireless device ascertains whether to associate with an alternative access point based on a level of attenuation of signal strength of transmissions by the alternative access point where the alternative access point transmits at less than full power.

The proliferation of wireless devices operating in the same radio frequency spectrum has exacerbated the problem of interference between devices. Various techniques for mitigating interference have been developed in response to the problem. In general, these techniques involve one or both of changing transmit power and changing transmit channel. One technique is to control all devices in a network via a server. In other words, the server coordinates the devices by issuing commands to each device indicating the channel and transmit power to use. However, this presents problems including lack of scalability, creation of a single point of failure, and what to do with devices that cannot be controlled either because the devices are not designed to be controlled or because the devices are not operated by the same person or organization. A distributed technique at least mitigates these problems. However, the distributed technique relies to at least some extent on the ability of wireless devices to evaluate other devices in the network. For example, if there is no server to command the device what channel and transmit power to use then the device itself should be able to do so. An ancillary issue created by devices selecting their transmit power and channel is coordination with other devices. Consider, for example, the scenario

where an Access Point (AP) is transmitting at only half power in order to reduce the likelihood of interference with other devices when no mobile Station (STA) associated with that AP requires that AP to transmit at greater than half power. The problem is that a STA that is not associated with the half-power AP cannot properly evaluate the half-power AP without data indicating that the AP is transmitting at only half power. In particular, without that information the AP could appear (to the STA) to be far away and a poor candidate because of a weak signal. However, with data indicating that the AP is transmitting at only half power the STA could calculate that the AP would actually provide a strong signal and therefore be a good candidate when transmitting at full power. The problem to which the claims are directed, therefore, is how a STA selects an AP in an environment where APs change their transmit power.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US2003/0207699 (Shpak) and US2005/0047354 (Zeira). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

The Office cites Shpak at Figure 1 and paragraph [0046] as describing access points transmitting at reduced power. However, the power reduction described by Shpak is neither conveyed to, nor used by, the mobile device. As shown in Shpak Figure 2, steps 42-46, in response to an association request from

the mobile device, the APs arbitrate with one another and the AP that "wins" sends a response with reduced transmit power. In other words, the APs select the AP-STA association pairing rather than the STA. This presents a practical problem because operation according to Shpak is dependent upon the APs being capable of arbitrating with one another. The Office cites Zeira at paragraphs [0014, 0020 and 0022-0023] as describing handoff based on automatic connection of signal strength of transmissions which represent maximum potential signal strength. However, the signal strength described by Zeira is the received signal strength, not the transmitted signal strength. As stated above, the problem is how a STA selects an AP in an environment where APs change their transmit power. Note that what is recited is not over-the-air/received attenuation versus interference, but rather attenuation by the AP (which is intentionally changed at will). The presently claimed invention recites one solution. In particular, claim 1 recites "ascertaining, by the wireless device, whether the wireless device should attempt to associate with an alternative access point, the ascertaining based at least in-part on a **level of attenuation of signal strength of transmissions by the alternative access point where the alternative access point transmits at less than full power**." (emphasis added). Even ignoring the contradictions between the cited references, there is no combination of features in those references that yields a STA selecting the AP by considering (at least in-part) power reduction by the AP.

It should also be noted that Shpak and Zeira fundamentally contradict one another on the features for which they are cited by the Office, and thus cannot be

properly combined. The feature which is recited in the pending claims, and for which the references are cited, is selection of an AP-STA pairing for association. Zeira teaches that the **STA selects the AP**, but does not contemplate how to do so where the AP might be transmitting at reduced power. Shpak teaches that the **APs select the STA**, thereby attempting to avoid the problem of the STA evaluating the reduced-power AP.[3] The result of combining a teaching in which the AP selects the STA with a teaching in which the STA selects the AP is indeminate. Therefore, the cited references cannot be combined in any meaningful way with regard to the features for which they are cited.

In response to the arguments presented above the examiner asserts that (1) the cited references account for signal strength and (2) the argued limitations are not recited in the claims. Applicant respectfully disagrees. With regard to the first point, Zeira considers only path loss. The recited technique has nothing to do with path loss. The signal strength attenuation with which the invention is concerned is the intentional alteration of transmit power by an access point. This is typically done to reduce unnecessary interference with other devices. For example, the AP may transmit at a power just great enough to service the most distant STA with which the AP is associated. Shpak describes power reduction, but the power reduction described by Shpak is neither conveyed to, nor used by, the mobile device. Shpak avoids the problem of a STA evaluating a partially-powered AP by having the AP select the STA, rather than the STA selecting the AP. In most networks the STA selects the AP, as taught by Zeira. Thus, adoption

[3] Note that a second STA could still evaluate Shpak's reduced power AP as being a poor candidate and never send an association request, so Shpak still fails to solve the problem in a comprehensive way

of the Shpak technique would require replacement of a significant amount of wireless infrastructure. The claimed invention allows the STA to continue to select the AP because the STA considers the power reduction by the AP. The cited references cannot even be combined in any reasonable manner because they teach fundamentally different techniques. However, even if the examiner disregards such contradictions, there is still no contortion of the references in which the STA considers the intentional power reduction by the AP when selecting an AP. With regard to the examiner's second point, the argued features are recited in the claims as "ascertaining, by the wireless device, whether the wireless device should attempt to associate with an alternative access point, the ascertaining based at least in-part on a **level of attenuation of signal strength of transmissions by the alternative access point where the alternative access point transmits at less than full power**." Applicant suggests that a review of the specification at page 33, line 7 through page 38, line 4, which discusses power adjustment by the AP may be helpful. One must appreciate the difference between path loss and transmit power adjustment in order to appreciate the invention.

VIII. Conclusion

Appellants accordingly request that the rejections be withdrawn and the application put forward for allowance.

Respectfully Submitted,

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Date

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Appendix A - Claims

1. (previously presented) A method for use by a wireless device in a wireless communications environment, the method comprising the steps of:

associating the wireless device with a current access point;

ascertaining, by the wireless device, whether the wireless device should attempt to associate with an alternative access point, the ascertaining based at least in-part on a level of attenuation of signal strength of transmissions by the alternative access point where the alternative access point transmits at less than full power; and

requesting association with the alternative access point if it is ascertained that the wireless device should attempt to associate with said alternative access point.

2. (previously presented) The method of claim 1 further comprising the step of: automatically collecting, by the wireless device, information about the alternative access point, including an indication of the level of attenuation.

3. (previously presented) The method of claim 2 wherein the step of ascertaining ascertains that the wireless device should attempt to associate with the alternative access point if the alternative access point is closer than the current access point in terms of a biased distance which accounts for AP loading.

4. (previously presented) The method of claim 3 wherein the step of ascertaining ascertains that the alternative access point is closer than the current access point by:

calculating a first biased distance between the wireless device and the current access point based on "x" samples;

calculating a second biased distance between the wireless device and the alternative access point based on "y" samples where "y" is less than "x"; and

ascertaining that the access point is closer than the current access point if the second biased distance is less than the first biased distance.

5. (previously presented) The method of claim 3 wherein the step of requesting association requests association by sending a message to the alternative access point.

6. (previously presented) The method of claim 1 wherein the step of ascertaining ascertains that the wireless device should attempt to associate with the alternative access point based at least in-part on maximum potential signal strength of the alternative access points.

Appendix B - Evidence Submitted

None.

Appendix C - Related Proceedings

None.